

Assessing Drinking Norms from Attending Drinking Events and Using Social Network Sites

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Abstract

This study compares how exposure to drinking information on social network sites (SNSs) and attending drinking events are related to college students' perceived drinking norms. A two-wave online survey using a national sample (N = 151) was conducted. While exposure to drinking information on SNSs was positively related to perceived injunctive drinking norms, attending drinking events was positively associated with perceived descriptive drinking norms. In addition, attention to social comparison information was positively related to both drinking norms and moderated the relationship between attending drinking events and both norms. This study extends the research on social norms and new technology, and suggests implications about how to incorporate new media into drinking campaigns.

1. Introduction

Alcohol use is widespread on college campuses. According to a report by the National Institute on Alcohol Abuse and Alcoholism in 2013, more than 80% of college students drink alcohol [1]. Furthermore, 44% of college students reported binge drinking in the previous 30 days, defined as consuming five alcoholic drinks in two hours for men or four alcoholic drinks for women [2].

One perspective for understanding college drinking is the social norms approach (SNA), which contends that people are subject to social norms and behave in accordance with their perceptions of these norms [3]. Two types of social norms guide human behavior. While *descriptive* norms relate to the perceived prevalence of a certain behavior, *injunctive* norms refer to the extent to which individuals believe that others approve of that behavior [4]. Perceived drinking norms explain great variances in college drinking [5-6].

However, one question that prior research has yet to address is how college students assess drinking norms. Given the importance of social norms to alcohol consumption among this population, we seek to bridge this gap in the present study. Social cognitive theory (SCT) maintains that the external environment shapes our perceptions and behaviors, so we constantly try to make sense of it [7]. Furthermore, almost all learning takes place vicariously by observing the behavior of others [7-8]. Traditionally, direct observations require individuals to physically attend relevant events. However, media and new technology eliminate temporal and geographic restrictions, enabling individuals to understand the external environment without direct involvement.

Specifically, college students may assess drinking norms by participating in drinking events and observing their peers' drinking behavior [9-10]. Alternatively, they can determine drinking norms through media consumption, without physically attending these events. Traditionally, individuals have acquired information about alcohol consumption through mass media [11]. However, today, social network sites (SNSs) have become an important channel for social interactions among college students. Research shows that a large amount of health-related information including drinking alcohol is exchanged on these sites [12-14]. Exposure to this information may influence college students' perceptions of drinking norms. The primary goal of this study is to compare the impact of attending drinking events and SNS use on descriptive and injunctive drinking norms.

In addition, personal factors like personality traits may also affect individuals' perceptions and behavior [7]. Specifically, attention to social comparison information (ATSCI), defined as how attentive individuals are to cues regarding social norms and social comparisons [15], has been proposed as a variable that may influence drinking norms assessment. Thus, the secondary goal of this study is to test the relationship between ATSCI and both drinking norms.

The literature review starts with reviewing SNA

scholarship, specifically highlighting the differences between descriptive and injunctive norms. Next, SCT is reviewed, and hypotheses are proposed about how attending drinking events and SNS use may affect perceived descriptive versus injunctive drinking norm. Finally, the relationship between ATSCI and drinking norms is discussed.

2. Literature review

2.1. SNA

The basic premise of SNA is that individuals are subject to social norms. When they are aware of what most other people do, they likely follow others' behavior to fit in the social environment and avoid social rejection [3]. The extant scholarship distinguishes between two types of social norms. *Descriptive* norms refer to what individuals believe others are doing, indicating the perceived prevalence of a certain behavior. *Injunctive* norms deal with individuals' perceptions about the approval that other people have for a certain behavior, thereby representing their perceived moral judgment of that behavior [4]. Note that both norms are essentially human perceptions, and human behavior is affected by these perceptions [3].

Descriptive and injunctive norms have different influences on human behavior. A stronger relationship was found between descriptive norms and alcohol consumption among college students who also perceived high levels of injunctive drinking norms (e.g. high levels of approval for drinking), compared to those who perceived low levels of injunctive drinking norms [16]. The same result was replicated for conservation [17-18]. These findings suggest that individuals do not simply follow descriptive norms and model perceived prevalent behaviors. Instead, their decision as to whether to engage in these behaviors depends on their perceptions of how much other people approve of such behavior.

Most empirical research focuses on how social norms shape behavior, but empirical evidence on how individuals assess social norms is lacking. SCT provides a theoretical framework to bridge this gap.

2.2. SCT and drinking norms

SCT explains human functioning in terms of triadic reciprocal determinism, which means that behavioral, environmental, and personal factors affect and are affected by each other [7]. Environmental factors refer to anything in the social context. Personal factors include cognitive, biological, and affective

variables. Human behaviors shape and are shaped by environmental stimuli and personal factors [7].

In addition, SCT contends that individuals try to expand their knowledge of the external environment, as environmental stimuli influence their behavior [7]. Although individuals can learn by engaging in certain acts directly, this method is time consuming. In contrast, vicarious experience -- learning by observing others' behavior -- reduces individuals' uncertainty about the external environment with relatively lower costs [8]. In fact, SCT contends that most behaviors can be learned through vicarious experience [7].

There are two general types of vicarious experience. The first requires individuals to physically attend relevant events and observe the behavior of others there [19-20]. By attending drinking events, individuals can estimate how popular alcohol consumption is, thereby inferring *descriptive* drinking norms [21]. In addition, college students can also exchange opinions about alcohol consumption at these drinking events. From these conversations, they can access the opinions that others have about alcohol consumption, which enables them to infer *injunctive* drinking norms [10, 22]. Thus,

H1: Attending drinking events is positively related to perceived (a) descriptive and (b) injunctive drinking norms.

An additional channel through which individuals can increase their knowledge about the environment is media consumption. Media present knowledge about the external environment and pass on this knowledge to individuals through media consumption [7]. Specifically, alcohol consumption is highlighted in many traditional mass media genres such as movies [11] and television [23]. Exposure to this information leads individuals to perceive drinking norms as being close to those presented in the media [23].

As SNSs gain increasing popularity among college students, they may have a strong influence on their perceived drinking norms. Although there are many alcohol commercials on SNSs that are created and disseminated by large companies just like on traditional mass media [24-25], these two types of media platforms have fundamental differences. Traditionally, individuals *passively* consume media content, which large organizations produce for and share with mass audiences. However, today users can create and share self-generated media content. Thus, they *actively* participate in the construction and dissemination of media content, thereby switching from media consumers to creators [26].

This technological affordance enables individuals to share their personal life on SNSs. Although there have always been concerns about the accuracy of online information, drinking information exchanged on

SNSs may be credible for several reasons. First, empirical research shows that college students still share a great deal of personal information on these sites, despite their acknowledgement of privacy concerns [27-28]. Rather than avoiding self-disclosure on SNSs, they develop multiple strategies to balance privacy concerns and their need for self-disclosure, for instance, restricting the access of certain groups to some information [29] and matching the channel of self-disclosure with the sensitivity of the topic [30]. Therefore, college students are very likely to share information about them partying and drinking alcohol on SNSs.

Second, there is a large overlap between the personal networks maintained on SNSs and their users' offline networks, which promotes authentic self-disclosure [31-32]. Some SNSs such as Facebook and Snapchat largely replicate their users' offline social networks [33-34]. Even though users may follow strangers on SNSs such as Twitter and Instagram, their online contacts still largely overlap with their offline networks [35]. This overlap increases the likelihood of discovering unauthentic self-disclosure, thereby promoting the veracity of self-generated information on these sites [31-32]. Furthermore, mass media associate alcohol consumption with desirable images [36] and promote this behavior especially among men by connecting it with masculinity [37]. Thus, for college students, sharing drinking information on SNSs may be viewed as a means of boosting their public image [12]. Although this information can make their SNS profiles less desirable for current or future employers, the benefit of boosting their public image among their peers at least right now outweighs this risk. Therefore, college students are very likely to share authentic information about them drinking alcohol and partying on SNSs.

In addition, research also provides empirical support for the authenticity of the drinking information shared on SNSs. Information shared on Facebook regarding intoxication and problem drinking was positively related to users' performance on the Alcohol Use Disorders Identification Test [14]. Another study replicated their result and found that information shared on Facebook about alcohol consumption was correlated with real-life drinking [13].

Taken together, these studies suggest that college students share drinking information on SNSs, and this information is generally credible. Therefore, according to SCT, drinking information shared by friends on SNSs may enable college students to assess the prevalence of alcohol consumption among their peers and the level of support for this behavior by their peers. Moreover, sharing drinking information on SNSs suggests that senders approve of alcohol consumption.

H2: Exposure to drinking information on SNSs is positively associated with perceived (a) descriptive and (b) injunctive drinking norms.

Additionally, descriptive norms are best assessed by direct observations of the overt behavior of others [9] because descriptive norms indicate the prevalence of a particular act [4]. Therefore, attending offline events enables individuals to directly observe that behavior, and thus, they may acquire more accurate information about descriptive norms. In contrast, although prior research provides evidence supporting the credibility of drinking information shared on SNSs [13-14], there may still be discrepancies between the information shared on- and offline simply because it is impossible to share all information about one's life on SNSs. Thus, assessment of the popularity of alcohol consumption based on information shared on SNSs may be less accurate than that based on information gained from attending drinking events. Therefore,

H3: Attending drinking events exhibits a stronger association with perceived descriptive drinking norms than exposure to drinking information on SNSs.

Finally, as argued before, both attending drinking events and SNS use enable individuals to assess perceived drinking norms. However, the extant literature has not established which experience provides a better explanation for the variances in injunctive drinking norms. Thus, the following research question is proposed:

RQ1: Which of the two variables -- attending drinking events or exposure to drinking information on SNSs -- is more strongly related to perceived injunctive drinking norms?

2.3. ATSCI and drinking norms

In addition to environmental stimuli, personal factors including cognitive, biological, and affective variables also contribute to individual perceptions and behaviors. SCT suggests that personal factors directly predict and are intertwined with environmental stimuli to shape human perception and behavior [7]. In this study, attention to social comparison information (ATSCI), meaning the extent to which individuals are attentive to cues in the external environment regarding social comparisons and social norms, was proposed to influence the assessment of both drinking norms [15].

Researchers argued that ATSCI indicates one's tendency to comply with social norms [15]. Individuals exhibiting high levels of ATSCI tend to pay close attention to their social context and adjust their behavior accordingly in order to be accepted and avoid social rejection [15]. Thus, they should notice cues indicating drinking norms, make more elaborations on these cues, and even over-interpret them, thereby

exaggerating drinking norms. Based on this logic,

H4: ATSCI is positively related to perceived (a) descriptive and (b) injunctive drinking norms.

In addition, ATSCI may moderate the relationship between both experiences and both drinking norms. Empirical research has consistently demonstrated a stronger relationship between social norms and human behavior among those exhibiting high levels of ATSCI [38-40], because these individuals are more attentive to normative cues in the external environment and are more concerned about social norms. Therefore, there may be a stronger relationship between attending drinking events and both drinking norms among individuals with high levels of ATSCI, as they may make more inferences based on their direct observations. The same moderation effect is expected for the relationship between exposure to drinking information on SNSs and both drinking norms. Thus,

H5: ATSCI moderates the relationship between attending drinking events and (a) perceived descriptive/(b) injunctive drinking norms, and between exposure to drinking information on SNSs and perceived (c) descriptive/(d) injunctive drinking norms, in that a stronger relationship is expected among high ATSCI individuals.

3. Method

3.1. Sample

A two-wave online survey was administered in the summer of 2015. In wave 1, attending drinking events, exposure to drinking information on SNSs, and alcohol consumption were assessed. In wave 2, perceived drinking norms and ATSCI were measured. Demographic information and membership in sororities and fraternities were measured in both waves. Each wave lasted two weeks.

Participants were recruited from a market research firm that maintains subject pools across the United States. Participants must be attending college and using SNSs regularly when the study was launched. Due to budgetary considerations, a target sample size (160) was determined before the survey started. In May 2015 (wave 1) an online survey was launched, receiving 391 complete responses. After two weeks, those who completed wave 1 received an email invitation to participate in wave 2. When the target sample size was achieved, the company ended the survey. After deleting the incomplete results, 151 responses were collected.

The final sample reported an average age of 21.39 ($SD = 2.44$) years, with about 76% of the participants identified as female. Over half were Caucasian (79),

followed by African Americans (24), Hispanics/Latinos (22), and Asians (13). Nearly one third of the respondents were sophomores (48), followed by juniors (47), seniors (43), and freshman (9). Thirty-five participants belonged to a fraternity or sorority.

3.2. Measures

Attending drinking events was measured by asking participants how many times they had been to a drinking event in the past two weeks ($M = 2.00$, $SD = 2.34$).

Exposure to drinking information on SNSs was measured by the following steps. First, participants were asked to name three SNSs that they used most often. They were provided with Boyd and Ellison's (2007) definition of SNS [41] to help them answer this question.

Next, participants were asked whether their friends posted or sent them any pictures of them drinking alcohol or partying through the SNSs they had named. If they answered yes, they were requested to indicate their answer to the following question on a 1-7 Likert scale (1 = never, 2 = only once, 3 = about every 5-6 days, 4 = about every 3-4 days, 5 = about every other day, 6 = about every day, 7 = more than once every day): "During the past week how often have your friends posted or sent you any pictures of themselves drinking alcohol or partying through the named SNS (the system automatically filled in the name of the SNS)?" If the participants answered no, they received a score of zero on this question.

The same questions were repeated 12 times to assess exposure to videos related to drinking and partying, text-based statuses (e.g., Facebook status, tweets), and instant messages on all three SNSs named earlier. The responses to these 12 questions were aggregated to determine *exposure to drinking information on SNSs* (Cronbach's $\alpha = .89$, $M = 2.21$, $SD = 1.67$).

ATSCI was assessed through the 13-item subscale of Lennox and Wolfe (1984)'s self-monitoring instrument [15] (Cronbach's $\alpha = .90$, $M = 4.09$, $SD = 1.15$, e.g., "I try to pay attention to the reactions of others to my behavior in order to avoid being out of place").

Park and Smith's (2007) 6-item scale assessing descriptive norms of talking about organ donations with one's family [4] was rewritten to measure *perceived descriptive drinking norms* (Cronbach's $\alpha = .91$, $M = 5.07$, $SD = 1.32$). *Perceived injunctive drinking norms* were assessed with Park and Smith's (2007) 12-item scale of injunctive norms [4] (Cronbach's $\alpha = .95$, $M = 4.24$, $SD = 1.41$).

Control variables include *gender* (0 = male, 1 = female) and *Greek membership* (0 = not a member of fraternities/sororities, 1 = fraternities/sororities member) because men and members of fraternities and sororities tended to exaggerate drinking norms [9].

Alcohol consumption was also controlled because heavy drinkers often exaggerate drinking norms [42]. It was measured following Labrie et al. (2008) who defined a standard drink as one 12 oz. beer, one 8 oz. shot of malt liquor, one 4 oz. glass of wine, and one 1.25 oz. shot of 80 proof liquor, because the amount of liquor contained in these four types of alcoholic beverages is the same [5]. These four types of drink were presented to participants in the form of photos. They were then asked to report how much of each drink they consumed at a typical drinking event they had attended during the past two weeks. These numbers were summed to indicate *alcohol consumption* ($M = 4.66$, $SD = 5.90$).

This measure indicates alcohol consumption at *one* drinking event, rather than the *total* amount in the past two weeks, which can only be assessed by multiplying the number of drinking events attended and the amount of alcohol consumed at one drinking event. If the total amount was used, it would be highly correlated with attending drinking events, causing multicollinearity in the subsequent analyses.

4. Results

Two hierarchical ordinal least squares (OLS) regression models were analyzed. Several notable results emerged. First, the model predicting perceived *descriptive* drinking norms was significant (see Table 1), and explained about 20% of the total variance in the dependent variable, $F(8, 142) = 5.61$, $\text{adj.}R^2 = .20$, $p < .001$. Gender ($\beta = .17$, $p < .044$), attending drinking events ($\beta = .30$, $p < .008$), ATSCI ($\beta = .26$, $p < .002$), and the interaction term between attending drinking events and ATSCI ($\beta = -.27$, $p < .007$) were significantly related to perceived descriptive drinking norms. However, exposure to drinking information on SNSs was not related to perceived descriptive drinking norms ($\beta = .08$, $p < .35$). Thus, H1a, H3 and H4a were supported, but H2a and H5c were rejected.

Simple slope test was conducted. The results show that the relationship between attending drinking events and perceived descriptive drinking norms was significant only among low ATSCI individuals ($\beta = .55$, $p < .002$, see Figure 1), which is opposite to H5a. Hence, H5a was partially supported.

The model predicting perceived *injunctive* drinking norms was also significant (see Table 2), and explained about 32% of the total variance in the dependent variable, $F(8, 142) = 9.88$, $\text{adj.}R^2 = .32$, $p <$

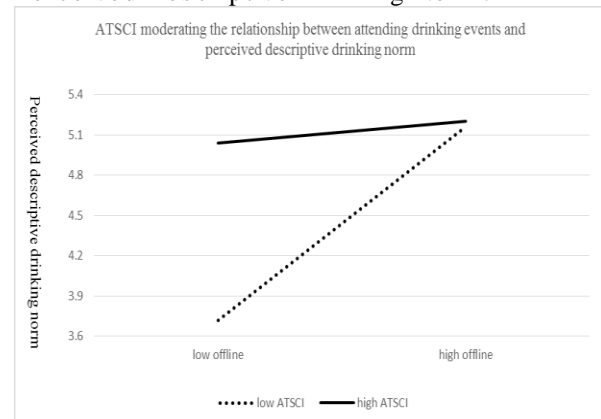
.001. Exposure to drinking information on SNSs ($\beta = .29$, $p < .001$), ATSCI ($\beta = .34$, $p < .001$) and the interaction between attending drinking events and ATSCI ($\beta = -.20$, $p < .032$) were significantly related to perceived injunctive drinking norms. However, attending drinking events was not related to perceived injunctive drinking norms ($\beta = .16$, $p < .13$). Thus, H2b and H4b were supported, but H1b and H5d were rejected.

Table 1. OLS regression model predicting perceived descriptive drinking norm.

	β	SE	VIF
Gender	.17*	.25	1.26
Greek membership	-.05	.25	1.18
Alcohol consumption	-.00	.02	2.03
Attending drinking events	.30**	.15	2.30
SNS exposure	.08	.11	1.34
ATSCI	.26**	.10	1.13
Drinking events * ATSCI	-.27**	.12	1.80
SNS * ATSCI	.06	.10	1.54
Adj. R^2 , F, power	.20***, $F(8, 142) = 5.61$, .997		

Note: *** $p < .001$, ** $p < .01$, * $p < .05$. Gender: 0 = male, 1 = female. Greek membership: 0 = not a member of fraternities or sororities, 1 = a member of fraternities or sororities.

Figure 1. ATSCI Moderating the Relationship between Attending Drinking Events and Perceived Descriptive Drinking Norm.



The results of a simple slope test show that the relationship between attending drinking events and injunctive drinking norms was significant only among individuals exhibiting low levels of ATSCI ($\beta = .33$, p

< .031, see Figure 2), partially supporting H5b.

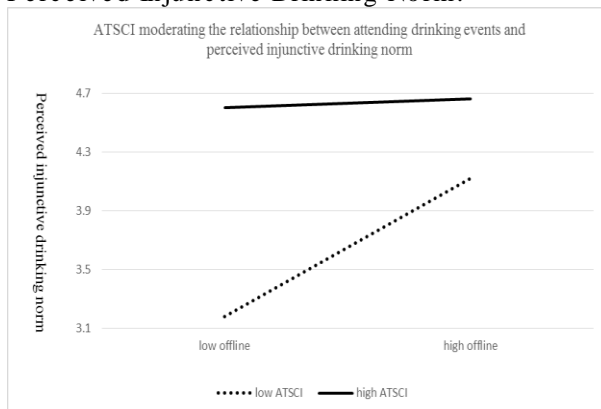
Due to the strong correlation between alcohol consumption and drinking experiences ($r = .66, p < .001$), results of VIF were presented in Tables 1 and 2. A VIF larger than 2.5 suggests multicollinearity [43]. This problem was not evident in the results.

Table 2. OLS regression model predicting perceived injunctive drinking norm.

	β	SE	VIF
Gender	.03	.25	1.26
Greek membership	-.06	.24	1.18
Alcohol consumption	.11	.02	2.03
Attending drinking events	.16	.14	2.30
SNS exposure	.29***	.11	1.34
ATSCI	.34***	.10	1.13
Drinking events * ATSCI	-.20*	.11	1.80
SNS * ATSCI	.09	.10	1.54
Adj. R ² , F, power	.30***, $F(7, 143) = 10.34$, .999		

Note: *** $p < .001$, ** $p < .01$, * $p < .05$. Gender: 0 = male, 1 = female. Greek membership: 0 = not a member of fraternities or sororities, 1 = a member of fraternities or sororities.

Figure 2. ATSCI Moderating the Relationship between Attending Drinking Events and Perceived Injunctive Drinking Norm.



5. Discussion

This study is a response to two current trends on college campuses: the popularity of SNSs and the increasingly serious problem of alcohol consumption. Given the importance of perceived drinking norms for drinking behavior, this study seeks to explain how college students assess drinking norms. Specifically,

this study compares how attending drinking events versus exposure to drinking information on SNSs are related to perceived descriptive and injunctive drinking norms. Results of a two-wave online survey with a national sample demonstrate that while attending drinking events was positively related to perceived descriptive drinking norms, exposure to drinking information on SNSs was positively associated with perceived injunctive drinking norms. In addition, ATSCI was positively related to both norms and moderated the relationship between attending drinking events and both norms. These findings extend SNA scholarship and provide evidence about how new technology affects health perceptions, suggesting important theoretical and practical implications.

5.1. Major findings

Results show that while attending drinking events was positively related only to perceived descriptive drinking norms, exposure to drinking information on SNSs was only positively associated with injunctive drinking norms. One explanation for this distinction may be rooted in the different nature of these two norms. Given that descriptive norms indicate one's perceptions regarding how popular a certain behavior is [4], participating in offline events offers individuals an opportunity to directly observe the target behavior and thus better assess its popularity. However, this direct access to cues regarding the prevalence of the target behavior is not available on SNSs, simply because individuals cannot share every detail of their lives on those sites.

In contrast, assessing injunctive drinking norms requires individuals to understand the opinions of others about alcohol consumption [9]. Given that sharing drinking information on SNSs suggests senders' approval of alcohol consumption, receiving a great deal of this information can exaggerate perceived injunctive drinking norms. In addition, college students may also exchange their opinions about alcohol consumption on SNSs directly. Although they might also discuss alcohol consumption at drinking events, attending drinking events is more time consuming, which might explain why exposure to drinking information on SNSs accounted for more variances in perceived injunctive drinking norms than attending drinking events.

These findings extend the work of Borsari and Carey (2003) [9] by suggesting boundary limitations of two different approaches to assessing descriptive and injunctive norms. Although direct observation can provide more accurate information, inconvenience is its trade-off. Similarly, although vicarious experiences of media use allow for easy access to certain

information, it can be valueless when direct observation is required.

In addition, these results also suggest that a communication multiplexity approach is needed by comparing the relative contribution of different channels to social norms. Future research should investigate how different channels are intertwined to affect social norms together. For example, attending drinking events may be correlated with exposure to drinking information on SNSs, and together they shape perceptions about social norms.

Furthermore, these findings suggest that drinking information exchanged on SNSs is indicative of offline drinking behavior, which supports prior research [13-14]. Several implications arise from this contention. First, SCT suggests that information gained through media consumption might be less reliable than direct experience [7]. This concern might be related to the characteristics of traditional mass media. Specifically, due to gatekeepers, information disseminated on traditional mass media is more likely manipulated. However, SNSs allow users to share self-generated media content, thus removing gatekeepers from the process of media production and increasing credibility of information shared there.

Second, current results suggest that personal information disclosed on SNSs is generally credible, possibly because of the overlap between personal networks offline and most SNSs, which indicates a high chance of anticipated future interactions. Therefore, if individuals share inaccurate information about themselves on SNSs, they may get caught [31-32]. Future research should examine how the unique attributes of new technology can affect human perceptions regarding health behavior.

In addition to environmental stimuli, ATSCI was also positively associated with both drinking norms, a reasonable finding given that ATSCI indicates how attentive individuals are to normative cues. Hence, individuals exhibiting high levels of ATSCI are more sensitive to normative cues about alcohol consumption and make more inferences about these cues, thereby exaggerating drinking norms.

Moreover, ATSCI moderated the relationship between attending drinking events and both drinking norms. However, contrary to hypotheses, there was a significant relationship between attending drinking events and both drinking norms only among *low* ATSCI individuals. Perhaps high ATSCI individuals pay attention to other cues *outside* drinking events that suggest drinking norms such as media coverage about college drinking. Thus, when assessing descriptive drinking norms, they may include information from those sources, which can weaken the contribution of attending drinking events to both norms. In contrast,

low ATSCI individuals may focus only on the normative cues available *at* those drinking events, thus highlighting the influence of drinking experiences on assessing drinking norms.

Finally, ATSCI did not moderate the relationship between exposure to drinking information on SNSs and both drinking norms. Therefore, regardless of the level of ATSCI, drinking information on SNSs may consistently function as an important source of *injunctive* drinking norms or consistently exhibit no relationship with *descriptive* drinking norms.

5.2. Limitations

The major limitation of this study is its pseudo-longitudinal design. This design was chosen for several reasons. Tracking changes in SNS use and drinking norms, which a typical longitudinal study allows for, is not the goal of this study. In addition, a typical single-point cross-sectional design can affect the validity of arguments because drinking experience and SNS use may influence and be influenced by both drinking norms. Measuring different variables at different points of time allows us to distinguish time differences and thus manipulate the direction of the relationships found between these variables. However, this pseudo-longitudinal design also has clear limitations. Given that not all variables were measured at both waves, the potential correlation between two variables in the same wave cannot be tested and controlled. Therefore, causations still cannot be established.

Next, the sample was relatively small and convenient in nature. Besides, 76% of the sample was female. These can threaten the external validity of current findings. However, results demonstrate high power (see Tables 1 & 2), which offsets the negative effect of a small sample.

Finally, in this study, a national sample may not necessarily be better than a sample selected from a college, because of the great variances in drinking norms between different colleges. Thus, our results may not be replicated on a specific college campus.

5.3. Theoretical implications

This study provides many theoretical implications for research on SNA, health persuasion, and new technology. First, consider that most SNA studies examine how social norms affect behavior. This study hence bridges an important gap in extant SNA research by explaining how individuals assess social norms.

Next, this study shows how descriptive and injunctive norms are assessed differently and the relative contributions of attending drinking events and SNS use to these two norms, thereby extending Borsari

and Carey (2003) [9]. This hence suggests that a communication multiplexity approach is needed to understand the unique contributions of different communication channels to social norms.

In addition, the present study also extends SCT by suggesting the value of SNSs to social influence. Specifically, SNS users actively participate in the construction of media-cultivated experiences. By sharing self-generated media content, SNS users collectively construct media-cultivated experiences, which exhibits important implications for new technology and persuasion. Therefore, the information exchanged on SNSs has the potential to exert peer pressure. Furthermore, given that teenagers and young adults are heavy SNS users and demonstrate a strong fear of social rejection [44], SNSs may be effective in persuading this population by employing SNA.

Finally, this study also extends previous research [45], which found a positive correlation between SNS use and alcohol consumption. Given that exposure to drinking content on SNSs may exaggerate injunctive drinking norms, these norms may explain the findings of these studies and mediate the relationship between SNS use and alcohol consumption.

5.4. Practical implications

This study also generates implications for health education and campaigns. First, our results suggest that information shared on SNSs may indicate substance use offline. Thus, SNSs provide valuable information for parents, social workers, and health practitioners for monitoring and predicting substance use by teenager and young adults. They can use this information to provide early intervention for those who might engage in this risky behavior.

Additionally, this study suggests that SNSs are a powerful vehicle through which to launch persuasive campaigns. For example, health practitioners and scholars should leverage the personal connection between SNS users by encouraging them to share campaign messages with their social connections, which might maximize the effectiveness of such messages. Moreover, as SNSs can be used for small, peer group communication, health practitioners and scholars should create normative messages to conduct SNA campaigns by using those sites.

5.5. Future directions

The current study suggests several directions for future research. First, scholars should collect actual behavioral data and use content analysis to better measure exposure to drinking information on SNSs. Second, longitudinal studies are needed to establish the

causal relationships between drinking experience, SNS use and social norms.

In addition to these methodological improvements, future research should investigate how different SNS user behaviors affect social norms. For example, sharing drinking content on SNSs may reinforce the senders' existing drinking norms. Next, future research should test the possible mediation path of perceived injunctive drinking norms for the relationship between SNS use and alcohol consumption.

Finally, future research should investigate how individuals' personal network may affect their perceived drinking norms. As individuals are likely surrounded by those sharing similar beliefs, they may intentionally avoid drinking events and receive less drinking information on SNSs. Thus, attending drinking events and exposure to drinking information on SNSs may mediate the relationship between individuals' network structure and their perceived drinking norms.

5.6. Conclusion

The current study demonstrates how college students assess drinking norms based on attending drinking events and SNS exchanges. The results show that while attending drinking events is positively related to perceived descriptive drinking norms, exposure to drinking information on SNSs has a positive association with perceived injunctive drinking norms. Additionally, ATSCI functions as a covariate in assessing both drinking norms and moderates the relationship between drinking experience and both norms. These findings suggest that a communication multiplexity approach is needed to understand the unique effect of different communication channels on health perceptions and behaviors.

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